

Claims

[c1] What is claimed is:

1. An in-situ corrosion monitoring system, comprising:
a chemical vessel for containing chemical liquid, said chemical vessel comprising a conductive shell body and an insulating interior lining coated therein, wherein said interior lining has potential of being attacked by said chemical liquid;
a robust detection electrode immersed in said chemical liquid; and
a measurement means being electrically connected to said detection electrode, wherein said measurement means is also electrically connected to said conductive shell body, and when said interior lining is damaged or pitted due to chemical attack by said chemical liquid and said chemical liquid thus contacts said conductive shell body, said measurement means receives a corresponding signal.

[c2] 2. The in-situ corrosion monitoring system according to claim 1 wherein said conductive shell body is made of stainless steel or carbon steel.

[c3] 3. The in-situ corrosion monitoring system according to

claim 1 wherein said conductive shell body is made of aluminum.

[c4] 4.The in-situ corrosion monitoring system according to claim 1 wherein said insulating interior lining comprises fluoropolymer resin materials.

[c5] 5.The in-situ corrosion monitoring system according to claim 4 wherein said fluoropolymer resin materials comprise poly-tetra-fluoroethylene (PTFE).

[c6] 6.The in-situ corrosion monitoring system according to claim 4 wherein said fluoropolymer resin materials comprise per-fluoroalkoxy (PFA).

[c7] 7.The in-situ corrosion monitoring system according to claim 1 wherein said robust detection electrode is made of corrosion-resistant materials.

[c8] 8.The in-situ corrosion monitoring system according to claim 7 wherein said corrosion-resistant materials comprises platinum (Pt).

[c9] 9.The in-situ corrosion monitoring system according to claim 1 wherein said measurement means is an ohmmeter.

[c10] 10.The in-situ corrosion monitoring system according to claim 9 wherein said ohmmeter has a measurement

range of about 1M Ohm to 40G Ohm.

- [c11] 11.The in-situ corrosion monitoring system according to claim 1 wherein said corresponding signal is a resistance signal.
- [c12] 12.An in-situ and real-time semiconductor process monitoring and controlling system, comprising:
a processing vessel for accommodating at least a semiconductor wafer to be wet-treated;
a wafer transferring means for loading or un-loading said semiconductor wafer into or out of said processing vessel;
a chemical vessel for containing chemical liquid and supplying said chemical liquid to said processing vessel through a piping system, said chemical vessel comprising a conductive shell body and an insulating interior lining coated therein, wherein said interior lining has potential of being attacked by said chemical liquid; and
wherein a robust detection electrode is immersed in said chemical liquid; a measurement means is electrically connected to said detection electrode, said measurement means is further electrically connected to said conductive shell body; when said interior lining is damaged or pitted due to chemical attack by said chemical liquid and said chemical liquid thus contacts said conductive shell body, said measurement means receives a corresponding sig-

nal; and

a controller unit connected to said measurement means, wherein once said measurement means receives said corresponding signal, said controller unit sends a first control signal to said wafer transferring means.

[c13] 13.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 12 wherein said first control signal stops said wafer transferring means to load said wafer into said processing vessel.

[c14] 14.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 12 wherein said controller unit is further connected to an on/off valve device installed in said piping system, and once said measurement means receives said corresponding signal, said controller unit sends a second control signal to said on/off valve device.

[c15] 15.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 14 wherein said second control signal turn off said on/off valve device.

[c16] 16.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 12

wherein said measurement means is an ohmmeter.

[c17] 17.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 16 wherein said ohmmeter has a measurement range of about 1M Ohm to 40G Ohm.

[c18] 18.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 12 wherein said insulating interior lining comprises fluoropolymer resin materials.

[c19] 19.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 18 wherein said fluoropolymer resin materials comprise poly-tetra-fluoroethylene (PTFE).

[c20] 20.The in-situ and real-time semiconductor process monitoring and controlling system according to claim 18 wherein said fluoropolymer resin materials comprise per-fluoroalkoxy (PFA).